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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/671,817

09/26/2003

Shuzo Nagami

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EXAMINER

HECKERT, JASON MARK

ART UNIT

PAPER NUMBER

1746

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/24/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/671,817

Applicant(s)

NAGAMI ET AL.

Examiner

Jason Heckert

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-8 and 11-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-8 and 11-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Response to Arguments***

1. Applicant's arguments filed on 11/22/06 have been fully considered but they are not persuasive. In regards to the amended claim 1, Hayashi et al. clearly discloses an upper gas supply 140 disposed at an upper surface of the chamber to supply gas into the chamber. In Fig. 9, arrows denote the downflow of gas into the chamber (col. 11 lines 27-33). Hayashi et al. also shows an exhaust element 62 located in the vicinity of the liquid surface. In regards to amended claim 11, Hayashi et al. does not disclose that a purge element discharges gas in a substantially parallel direction. However, Kamikawa does disclose said feature (see figures 3 and 4). Gas supply nozzles 44, or purge elements, supply gas in a direction parallel to the surface of the processing liquid. Furthermore, Kamikawa, similarly to Hayashi, discloses an exhaust port 28 located in the vicinity of the processing liquid and hence the nozzles 44 are located above the exhaust port.

2. In regards to claims 2 and 3, Hayashi disclosed that radiation-type heating with the use of translucent materials in chamber construction, such as quartz, are well known in the prior art. Applicant has amended the claims to further specify that the light radiation-type heating device in the preferred embodiments be of halogen or infrared type. Halogen and infrared type heating elements are notoriously well known radiation-type heating elements. Katagiri et al. disclose that radiation-type heating elements for use in heating a substrate commonly include halogen and infrared lamps (col. 19 lines 34-35).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 5, 6, 11, and 14 rejected under 35 U.S.C. 102(b) as being clearly anticipated by Kamikawa. Kamikawa discloses a substrate processing apparatus 18 comprising a cleaning tank to hold liquid 22, a holding element 24, liquid supply nozzles 25, a drying process chamber 23 with an interior and drying gas supply nozzles 44, wherein said holding element 24 displaces the substrate from the cleaning chamber to the drying chamber. Also disclosed is an exhaust port 28 located in the vicinity of the processing liquid. Supply nozzles 25 supply the chemical solution or cleaning agent as well as the rinse agent, such as heated distilled water. The gas supply nozzles, or purge elements, inject a drying gas like nitrogen in a direction parallel to the surface of the processing liquid (see Figures 3 and 4). In Fig. 3 the substrate W is clearly depicted as being supported parallel to the vertical direction.

5. Claims 1, 5, 6, 8, 12, 13, and 14 rejected under 35 U.S.C. 102(b) as being clearly anticipated by Hayashi et al. Hayashi et al. disclose a substrate processing apparatus comprising a rinsing bath to hold process liquid 12, a substrate holder 28, a supply inlet 18 for supplying the process liquid, a chamber 16 with gas supply inlet 26 for discharging gas into said chamber, and an elevating and lowering device 29 for moving

Art Unit: 1746

the holder up and down. The gas supply element includes a filter 94 for filtering the nitrogen gas before it is discharged into the process chamber. While the supply liquid is disclosed as being heated water, the apparatus is fully capable of providing other liquids, such as chemical solutions.

6. In another embodiment of the invention, Hayashi et al. disclose that a heating element 122 and a blower 138 can be provided to heat the process chamber and exhaust air from the process chamber respectively. Used in conjunction with controlling system 130, various parameters such as heat and humidity can be controlled. Furthermore, in this embodiment, an exhaust outlet 62 is located in the vicinity of the liquid surface of said process liquid and the gas supply portion 140 is provided at the upper face of the chamber 16. In Fig. 9, the substrate W is clearly depicted as being supported parallel to the vertical direction.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. in view of Katagiri et al. Hayashi et al. discloses all of the limitations of claim 1, as well as including a heater to heat the nitrogen gas injected by gas supply inlet 26, thereby controlling the atmosphere of said chamber so as to be in a heated

Art Unit: 1746

state. Hayashi does not disclose that the process chamber includes a translucent member and a light radiation element. However, Hayashi does disclose the use of a translucent member and light radiation element as being well known and in use in prior art (column 2 lines 54-69, column 3 lines 1-2). Furthermore Katagiri et al. disclose that radiation-type heating elements for use in heating a substrate commonly include halogen and infrared lamps (col. 19 lines 34-35). It would have been obvious at the time of the invention to modify Hayashi and include a translucent member and a light radiation element, such as a halogen or infrared lamp, to heat the substrate as a means to promote drying.

9. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi et al. or Kamikawa, as applied to claim 1 above, in view of Yoshitani. Both Kamikawa and Hayashi et al. disclose all of the limitations of claim 1, but do not disclose a de-gasing element in the liquid supply line. Yoshitani discloses a substrate processing apparatus that contains a de-gasing element to remove bubbles from liquid supply (column 6 lines 1-12). It would have been obvious at the time of the invention to modify either Hayashi et al. or Kamikawa and include a bubble suppressing element, as disclosed by Yoshitani, in order to provide a uniform treatment of the substrate as well as increased pump stability.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Art Unit: 1746

US Patent No. 6,394,110 to Kamikawa et al.: Kamikawa et al. disclose a substrate processing apparatus of containing many similar elements to that of the applicants including multiple chambers for processing, heating elements, supply lines, a movable substrate holder, and a light radiation-heating element.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Heckert whose telephone number is (571) 272-2702. The examiner can normally be reached on Mon. to Friday, 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571)272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1746

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMH



MICHAEL BARR
SUPERVISORY PATENT EXAMINER